



The Pest Monitor

A Pesticide Use Reduction Update

Issue 3

Weed Wars Episode 1 - A Pilot Project Update

ATTACK OF THE STEAM HEAT WEEDER

Using heat to control weeds has been utilized for centuries. In our urban environment, burning of any kind is not an option so the City has turned to another source of heat, STEAM. City staff have been working closely with a local distributor of steam-heat systems to develop a system that is appropriate for landscape applications. Initially, Parks staff used a hot water weeder to drench an area of wet meadow vegetation (predominately clover) at a demonstration site at Pritchard Beach Wetland. This initial application killed approximately 50 percent of the red clover. Other test areas with different weed species have not been as successful.

Parks landscape staff worked with the distributor to

improve the system and last month spent a day working on weed control at the Green Lake Demonstration site. They used the steam machine along the entire project area shoreline for about 4 hours. Fuel consumption was approximately 10 gallons of diesel to fire the boiler and 3 gallons of gasoline to run the pump system. Nearly 525 gallons of water in the form of 230° steam was used over an area of 4,000 square feet. Weeds that fell under attack included plantain, annual bluegrass, bindweed, yellow flag iris, perennial grasses, and other perennials. Most of the treated weeds showed immediate wilting and slight blackening. Combined with infrared radiant heat applications and flame weeding it appears that a significant percentage of the vegetation may have been damaged.



The key to controlling most perennial weeds is to concentrate enough heat long enough to penetrate and cook the adventitious buds in the root crown. Perennial weeds with adventitious buds on underground rhizomes or tubers cannot be killed in this manner but can be top killed and severely weakened. Many annual weeds can be killed with steam or hot water. As with all methods of weed control, it is important to treat when the weeds are small and most vulnerable.

Some disadvantages of this steam weeding system include the bulk and expense of the equipment, noise of operation, labor intensity, repeat applications, and fuel usage and exhaust emissions. The use of heat for weed control has potential in specific areas and with specific weed species. This fall we will conduct additional tests for controlling winter annuals such as chickweed. In many sensitive areas there are few alternatives for weed control. Having another weapon in our arsenal against the war on weeds is a good thing.

Green Lake pilot project area
treated with steam weed heater

PhilRenfrow
Parks Department

Weeds Wilt Under Radiant Heat

The radiant heat weeder has been enlisted by gardeners at City Light to assist in efforts to reduce pesticide use in and around substations. Testing started in early August and results so far have been encouraging and the weeder offers many advantages over the current flame weeders now in use.

How it works - Using ceramic PB pyro-elements with propane as the energy source the ceramic tiles produce a temperature of up to 1000°. When slowly passed over weeds (1.5 second dwell time) the protein and moisture cells within the plant burst. The weeds are not charred but wilt and become dark green much as we have seen with the steam weeder. Since protein cells are destroyed, photosynthesis stops and the weeds die. Any weed seeds, resistant bacteria and fungus are also destroyed. The radiant heat penetrates only 1 or 2 mm into the soil so microorganisms living below that depth are spared.

Fuel Efficiency – Flame weeders use about 5-7.5 gallons of propane per 8-hour day doing normal spot treatment. The radiant heat Junior 3 model uses 2.5 gallons per 8-hour day.

Weed Control - Control of annual weeds and perennial weed seedlings has been great. As with most alternative weed control methods repeat treatments are needed for established perennial weeds. Surprisingly, control of ivy has been very effective and monitoring for long term results continues. As for pre-emergent effects, staff are waiting for the sprouting season to arrive to ascertain the effectiveness.

Ease of Use – When using flamers frustration can arise from the “freeze-up” problems causing down time or needless tank switching. The radiant-heat weeders come with pressure regulators pre-set and non-adjustable to maximize fuel efficiency and to provide consistent heat eliminating “freeze up”. The increased fuel efficiency allows use of smaller fuel containers allowing fuel supplies to be carried on the back or on the belt increasing mobility and reducing fatigue.

Increased area of application – Because of the increased control of the heat, these weeders can be used in close proximity to desirable plants. The lack of open flame also allows them to be used in situations where flame weeders are totally out of the question, such as near parked vehicles, though the need for caution is not diminished. Heat penetration is minimal but intense in the application area. As an example, weeds under leaf debris between three and four leaves deep were unaffected by the heat. The advertised dwell time (time spent over the treatment area) seems to average 1.5 seconds though it varies according to weed species and length of establishment. As an alternative control method in perennial or shrub beds and along fence lines the equipment passed the test.

Safety – The increased directional control of the heat and lack of an open flame greatly reduce the fire risk, which expands the types of treatable areas.

Please feel free to contact E.J. Hook at 684-0747 or through city email for more information.

EJ Hook, City Light



Jeanne Schollemeyer tests
the Radiant Heat Weeder

A big THANK YOU to those grounds management staff who have submitted pesticide application records to OEM. The data will be used to report to Mayor and Council on the excellent progress to meeting the pesticide reduction goal. As soon as we get the outstanding data we will let you know the results.



City of Seattle

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